REMARKS

The claims have been amended to more clearly claim the present invention. Claims 1-8, and 15 were examined. Claims 9-14 have been canceled as being drawn to a non-elected invention. Claim 3 has been cancelled. Claims 16-18 were previously withdrawn pending allowance of dependent Claim 2 at which point Applicants have respectfully requested rejoinder. Claims 1-2, 4, 6-8, and 15 have been amended. The changes made to the Specification and Claims by the current amendment, including ~~deletions~~ and additions, are shown herein with deletions designated with a strikethrough and additions underlined. No new matter has been added herewith. As a result of the amendment, Claims 1, 2, 4-8, and 15 are presented for further examination.

To overcome the objections raised by the Examiner as to priority and the drawings, an application data sheet is submitted herewith in compliance with the requirements of 37 CFR 1.63(c). Formal drawings are also submitted herewith. To overcome the objection to the Title of the invention, a new title which is more descriptive of the claimed invention has been substituted.

Rejection under 35 U.S.C.§101

Claim 8 was rejected under 35 U.S.C.§101 as being directed to non-statutory subject matter. However, the claim has been amended to read "A cell having introduced therein the plasmid vector according to claim 2" which Applicants submit complies with the statute regarding patentable subject matter. Thus, Applicants respectfully request withdrawal of the rejection under 35 U.S.C.§101.

Rejection under 35 U.S.C.§112, first paragraph

Claims 8 and 15 were rejected under 35 U.S.C.§112, first paragraph because the Examiner believed that they were not enabled.

However, claim 8 was previously drawn to a transformant which included any transformed animal or human. Amended Claim 8 is drawn to a cell having introduced therein the plasmid vector according to claim 2. One of skill in the art, even without the teaching in the present specification, would know how to transform any type of cell with a vector to produce a cell transformed by the plasmid vector. Thus, Applicants submit that Claim 8 is fully enabled.

Claim 15 is drawn to a method for producing a useful substance by providing the plasmid vector of Claim 2, introducing the vector into a host cell, allowing the DNA segment to integrate,

and thereby expressing the protein of interest. Applicants submit that the only additional step this would require for one of skill in the art is to identify a gene of interest (which produces a useful substance), clone the gene of interest operably linked to a promoter into the plasmid in such a way that it will be expressed once integrated. Applicants submit that one of skill in the art, using the teaching of useful GOIs in the specification and the knowledge of the skilled artisan, would be easily able to identify and clone an expressible gene of interest into the plasmid. Further, one of skill in the art would know how to identify whether the encoded protein were being expressed.

In view of the above amendments and arguments, Applicants respectfully request withdrawal of the rejection under 35 U.S.C.112, first paragraph.

Rejection under 35 U.S.C.§112, second paragraph

Claims 1-8 and 15 were rejected under 35 U.S.C.§112, second paragraph because the Examiner believed that they were indefinite for the following reasons:

Claims 1 and 2 were believed indefinite for recitation of "when integrase" because the Examiner believed that it was unclear whether the "integrase" was referring to the integrase of D1 or a different integrase. Further the claims were believed indefinite because the Examiner believed that there was no antecedent basis for "the integration reaction." Claim 1 has been amended to specify that D1 is "a retroviral integrase gene" and that the "integrase resulting from the expression of D1 catalyzes integration". Thus, Applicants believe that Claim 1 and all dependent claims are now definite with respect to the use of the term "integrase" and withdrawal of the rejection is respectfully requested.

The Examiner believed Claims 1-8 and 15 indefinite as to the metes and bounds of the term "integrase". However, the integrase is specified as a "retroviral integrase". The metes and bounds of this term are definite and Applicants therefore respectfully request withdrawal of the rejection.

The Examiner believed that Claims 2, 8 and 14 were indefinite as to the inclusion of the language "any DNA segment to be integrated into the genome of host cells" in part D4 of Claim 2. The Claims has been amended to read "a gene of interest (GOI)", a term which is known and understood by one of skill in the art. Thus, Applicants respectfully request withdrawal of the rejection under 35 U.S.C.§112, second paragraph.

Claim 3 was believed indefinite for the recitation of "one LTR is joined to the other LTR" in line 3 as having no antecedent basis. Claim 3 has been amended to read "the integrase recognition region (D3) comprises a connecting sequence of terminal bases formed when one long terminal repeat (LTR) is joined to another LTR.

Claim 4 was believed indefinite as to the recitation of the location of D2 and D3 as being "between two LTR's". Applicants have amended Claim 4 to specify that D2 and D3 are positioned within the connecting sequence of terminal bases formed when one LTR is joined to another LTR.

Claims 6 and 7 were believed indefinite as being directed to an integrase gene "derived from viruses". Thus, the claims have been amended to state that the integrase gene is "isolated from viruses".

Claim 7 was believed indefinite as being directed to the plasmid vector "wherein the viruses belonging to Retroviridae comprise viruses belonging to subfamily Oncoviridae of Retroviridae". The claims has been amended to specify that the viruses belonging to Retroviridae are "from the subfamily Oncoviridae".

In view of the amendments herein, Applicants respectfully request withdrawal of the rejections under 35 U.S.C.§112, second paragraph.

Rejection under 35 U.S.C.§102(b)

Claims 1, 2, and 6-8 were rejected under 35 U.S.C.§102(b) as being anticipated by either one of Panganiban et al. (1983) or Panganiban (1984). More specifically, the Examiner believes that both references teach plasmid vectors comprising the genome of retroviruses and thus meet the limitations of Claims 1, 2, and 6-8.

To be anticipatory under 35 U.S.C. § 102, a reference must teach each and every element of the claimed invention. *See Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1379 (Fed. Cir. 1986). "Invalidity for anticipation requires that all of the elements and limitations of the claim are found within a single prior art reference. ...There must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention." *See Scripps Clinic & Research Foundation v. Genentech, Inc.*, 927 F.2d 1565 (Fed. Cir. 1991).

The presently claimed invention is a plasmid vector having a retroviral integrase gene, a segment of DNA forming a region for controlling the expression of the integrase gene, and a

segment of DNA serving as an integrase recognition region for the integrase expressed by the integrase gene. The claims further specify that the integrase recognition region (D3) comprises a connecting sequence of terminal bases formed when one LTR is joined to another LTR. Thus, the limitation of Claim 3 has been added to Claims 1 and 2. Applicants would like the Examiner to note that in the Office Action, the Examiner identifies Claim 3 as being free of art.

In Panganiban (1984), a plasmid pAP173 is constructed through the insertion of a junction fragment of two tandem LTRs into a plasmid pPB101 that contains a complete copy of spleen necrosis virus DNA including both LTRs. Both plasmids are co-transfected into chicken embryo fribroblasts (CEFs). Virus containing pAP173 RNA, which is generated through the advantage of helper function of pPB101, is then obtained. The resultant virus is allowed to infect CEFs, and integrates into the host genome. However, Panganiban (1983) does not teach or suggest that that the integrase recognition region (D3) comprises a connecting sequence of terminal bases formed when one LTR is joined to another LTR. Thus, Panganiban (1983) does not teach all of the claimed elements and cannot be anticipatory.

Claims 1, 2, and 8 were rejected under 35 U.S.C.§102(b) as being anticipated by VonMelchner et al. (WO 97/07223). More specifically, the Examiner believes that VonMelchner et al. (referred to herein as "VonMelchner") teaches plasmid vectors comprising a Cre recombinase gene, a region for controlling expression of the integrase gene and a segment of DNA serving as an integrase recognition region.

However, the plasmid vector of VonMelchner differs from the claimed vector in a number of ways. First, VonMelchner does not teach an "integrase", much less a retroviral integrase. VonMelchner uses a recombinase gene not an integrase gene. Second, VonMelchner does not include an integrase recognition region. VonMelchner includes loxp which serves only as a target sequence of Cre recombinase, not as a target sequence involved in integration. Thirdly, VonMelchner does not teach or suggest that the integrase recognition region (D3) comprises a connecting sequence of terminal bases formed when one LTR is joined to another LTR. Thus, VonMelchner does not teach all of the claimed elements and VonMelchner is not anticipatory.

Conclusion

In view of Applicants' amendments to the claims and the foregoing Remarks, it is respectfully submitted that the present application is in condition for allowance. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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Dated: Mar 25, 2004

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